Summary: Achfary (Sutherland)

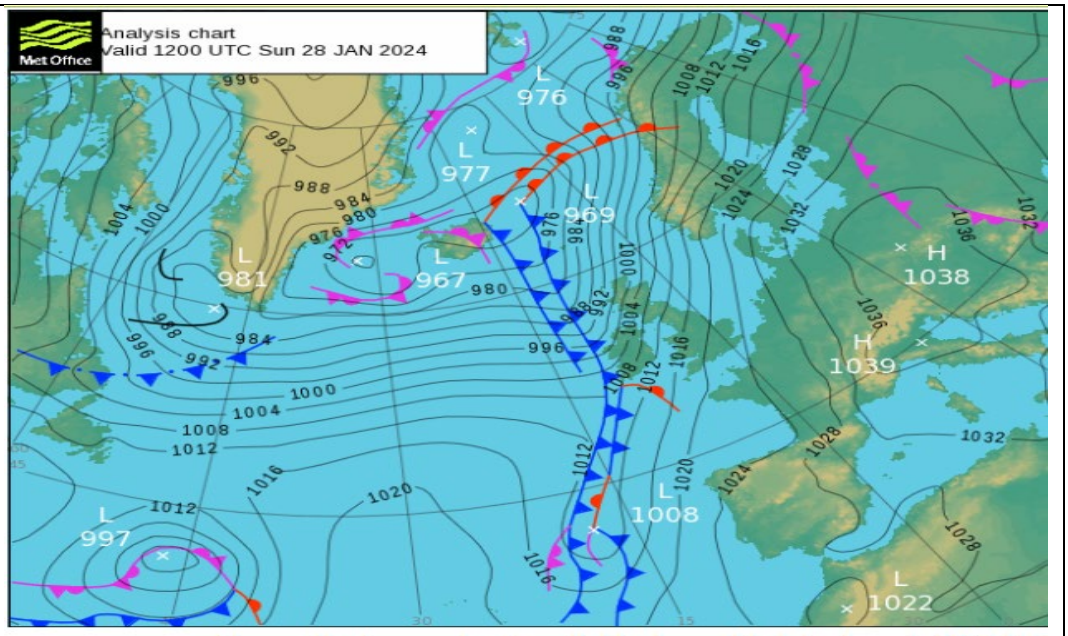
New record: January UK highest daily max record.

Occurrence: On 28th January 2024 a temperature of 19.9C was recorded at VCN site Achfary (Sutherland). This beats the previous record of 18.3 set in 1958, 1971 & 2003.

Verified: SWAT Group verified this reading 31/01/2024

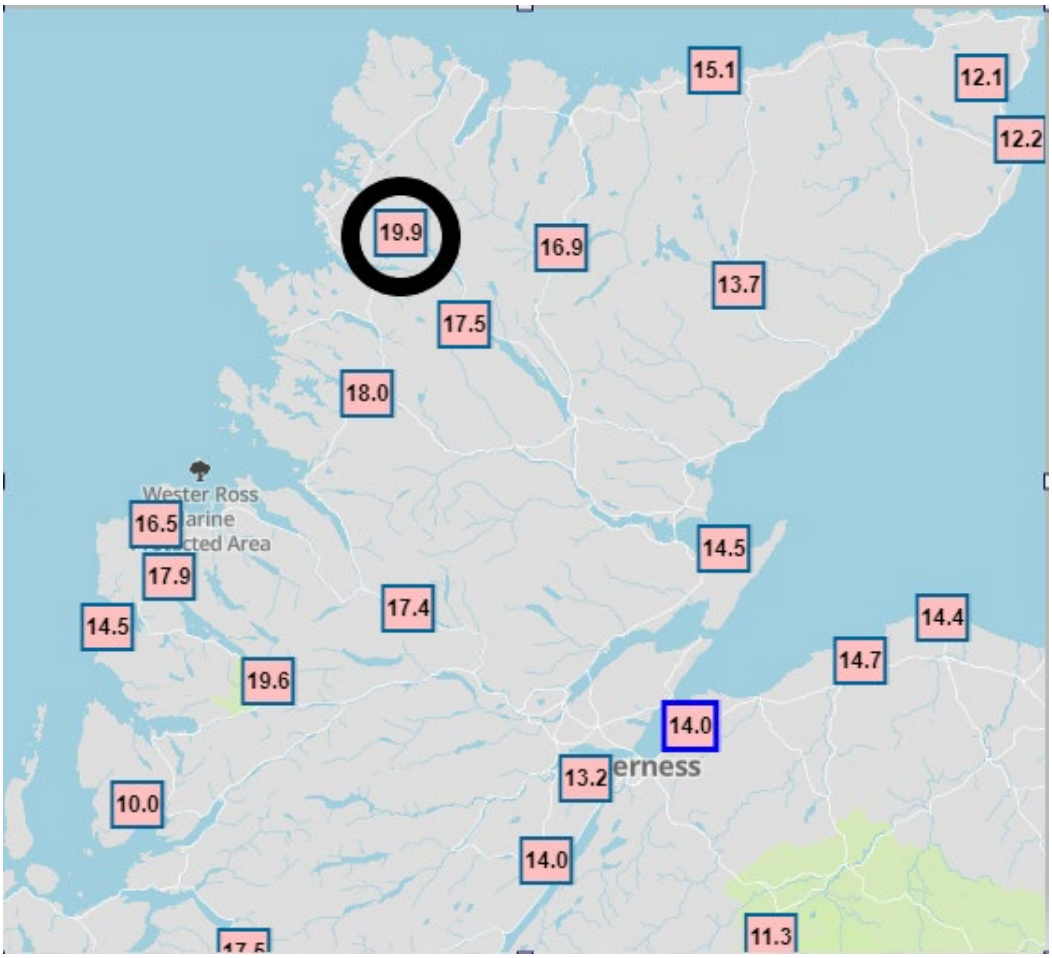
GDPR: No personal information is to be contained within this document

Note: Each event will no doubt be unique, a structure is provided below for ensuring conformance of process and to aid the collection of relevant information. Reference to the Regional Network Officer ISO process is expected. Additional information will no doubt also be required.

Is the 'occurrence/record' feasible given the general synoptic situation? QM	 UK was influenced by the characteristics of a warm sector with a tropical maritime airmass when the record temperature was recorded with strong SW winds for much of Scotland. There was rain associated with the cold front situated to the west of the UK which would make slow progress SE during the day. The site at Achfary in the NW corner of Scotland was the beneficiary of what is known as the Fohn effect. The Fohn effect resulted in enhanced temperatures to the lee of the high ground. This combined with local effects can result in unseasonably high temperatures in the Scottish Highlands during winter.

In this synoptic situation is the station concerned one feasible for the 'occurrence/record'? QM

A map of the daily maximum temperatures for 28th January 2024



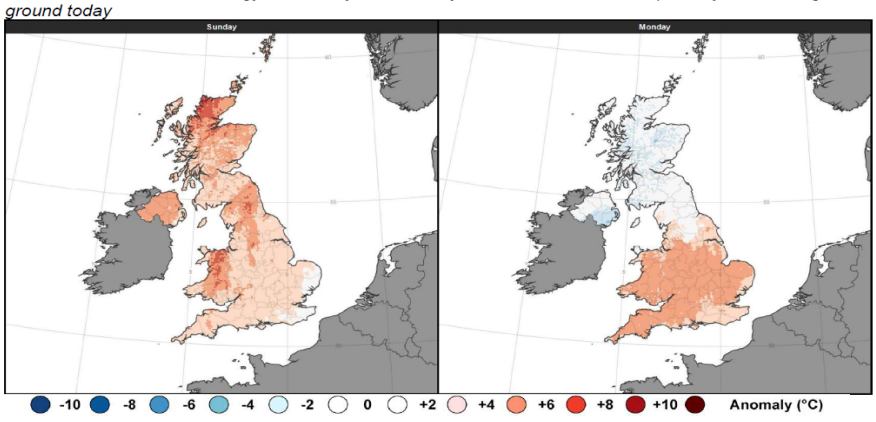
Max temperature forecasts from the guidance on the morning of the 28th.

Achfary is in the very mild temperature area forecast in the far NW of Scotland.

Temperature:

- Today, maxima trending above average across the UK, particularly across N Scotland, NI, N England and Wales. Maxima perhaps 1-2C higher across central England given pessimistic cloud forecast.
- Parts of the N of NI, N Scotland, but especially N Wales, likely to see 13-15C, with a chance of 17C for the latter.
- Tonight, very mild across England and Wales but colder across Scotland and NI by the end of the night with a widespread albeit slight frost in N Scotland.
- This NW/SE contrast continues into Monday.

UKV Tmax vs NCIC climatology for Sunday and Monday. Some notable max temps likely to lee of high ground today



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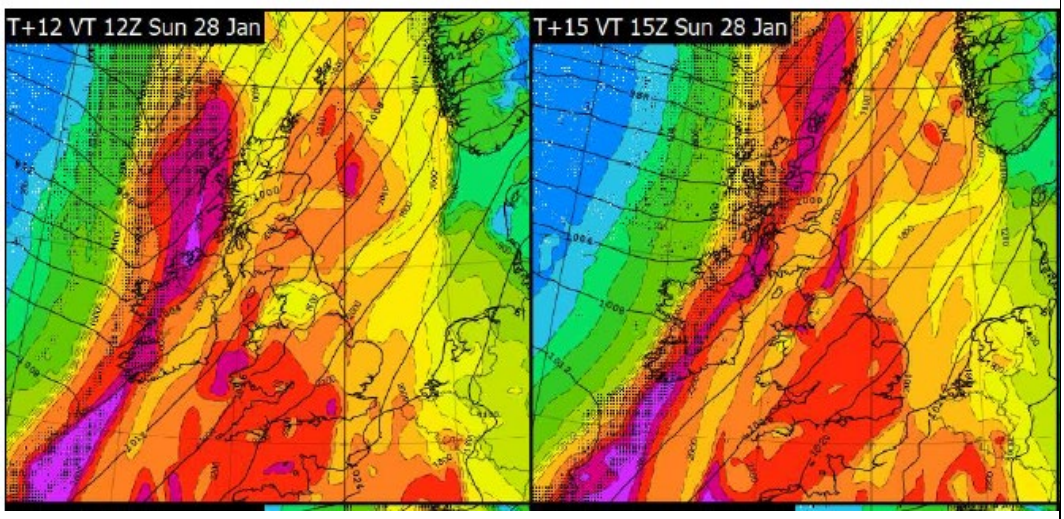
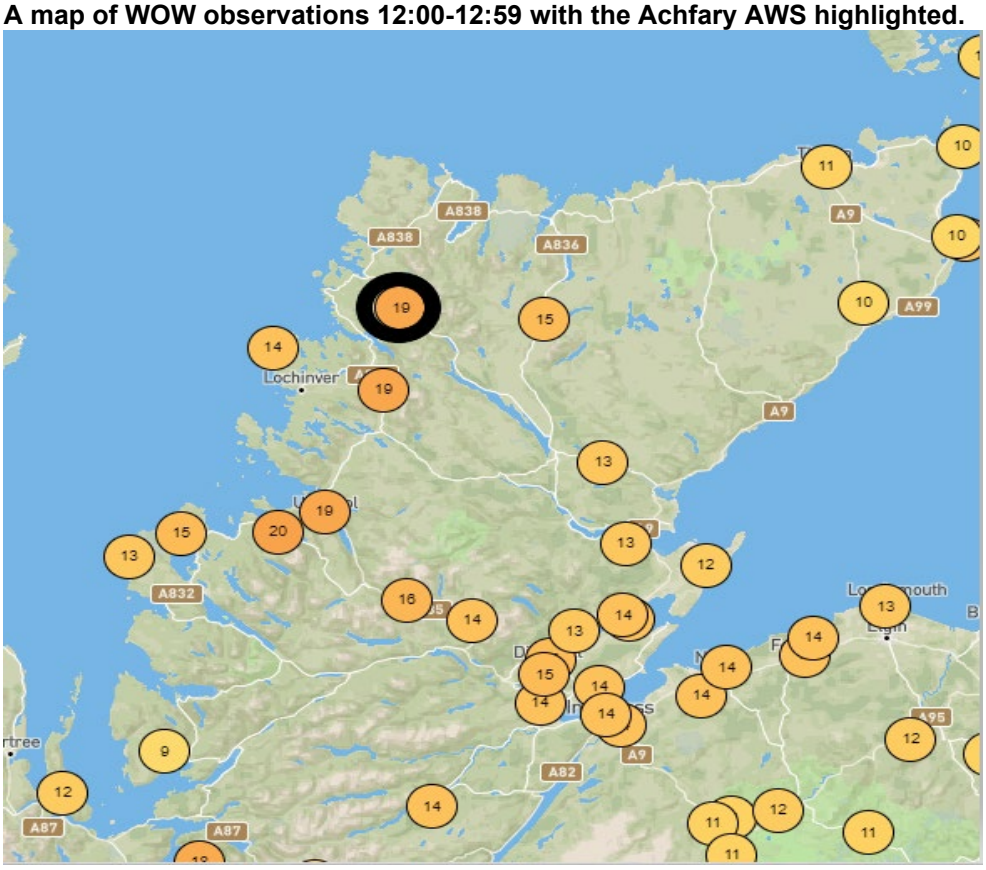
Model output showing the mild air edging into the NW corner of Scotland.



A map of WOW observations 12:00-12:59 with the Achfary AWS highlighted.



The 20C is read from a non- Met Office Site with their own unverified equipment and exposure.

Quality Management	Previous scores & comments	Previous Quality Control measures indicate no quality issues identified.
	Current comments	Value fits in with nearby sites.
Evidence of occurrence/record. RNM		Observer from site sent image of screen and graph trace to confirm reading. Nearby sites have all been contacted and confirmed lower temperatures to that of Achfary. Poolewe 17.9C; Port Henderson 14.5C; Achiltibuie 18.0C.
Statement on the risk of interference RNM		No signs of interference. Grass in-keeping with natural surroundings. Site is located in observer's front garden, next to the only road through the village. The public could access if they wanted to, but the village is very remote, so unlikely. The observer thinks it unlikely anyone could have visited the screen without being seen.

Instrument RNM	Approved Type	HMT333 approved instrument. Installed correctly. Correct serial/asset number. Within calibration (18/07/2022).
	Asset ID / Applicable co-efficients	Asset ID correct (SM006451 / SN N3640149. Within calibration. Coefficients are zero.
	Verification checks	Verification checks carried out in-field with an aspirated flask and ice bath. Instrument passed within limits (0.2°C):
	Calibration period	Instrument was last calibrated on 18/07/2022 so is within the standard 5-year calibration period.
	Physical condition	Instrument and screen in good condition. No signs of damage. Screen a little dusty inside, but otherwise clean throughout. Screen has some small blisters in the exterior paint, but not has flaked off and no bare metal is exposed.
Instrument Installation RNM		Screen and instrument have been installed correctly. HMT333 is installed in correct V1 configuration. Screen is set to the correct height and orientation.
Instrument Exposure RNM	Exposure – CIMO rating	CIMO ASSESSMENT OF: / CIMO SCORE / HIGH SCORE REASON 1: TEMPERATURE AND HUMIDITY / CLASS 5 / (1) SITE IS SHADED (2) PROXIMITY OF HEAT SOURCES

Certificate of Calibration for Electronic Thermometer

Met Ref: 125171 **Type:** Vaisala HMT333
Serial No.: N3640149 **Asset Number:** SM006451
Cert No.: TE255/22 **Calibrated by:** SW
Test Date: 18/07/2022 **SPRT Isotech 670SQ sn157**
Recalibrate Before: 17/07/2027

For the Chief Executive, Met Office.

Test Temp.(°C)	Correction (°C)
+50.0	0.0
+40.0	0.0
+30.0	0.0
+20.0	0.0
+10.0	0.0
0.0	0.0
-10.0	0.0
-20.0	0.0
-30.0	0.0

Please read the notes overleaf.

VAISALA HMT333 TEMP CHECK	
SITE: ACHFARY	DATE: 30/01/2024

Tested in an aspirated ice bath. Test started at 1200.

CURRENT UNIT INSTALLED			
ASSET NUMBER: SM006451		SERIAL NUMBER: N3640149	
TEMPERATURE COMPARISON CHECK			
STATION		**TRANSFER STANDARD**	
Reading 1: 1220	0.0	*Reading 1:*	0.04
Reading 2: 1225	0.0	*Reading 2:*	0.04
Reading 3: 1230	0.0	*Reading 3:*	0.04
Average:	0.0	*Average:*	0.04

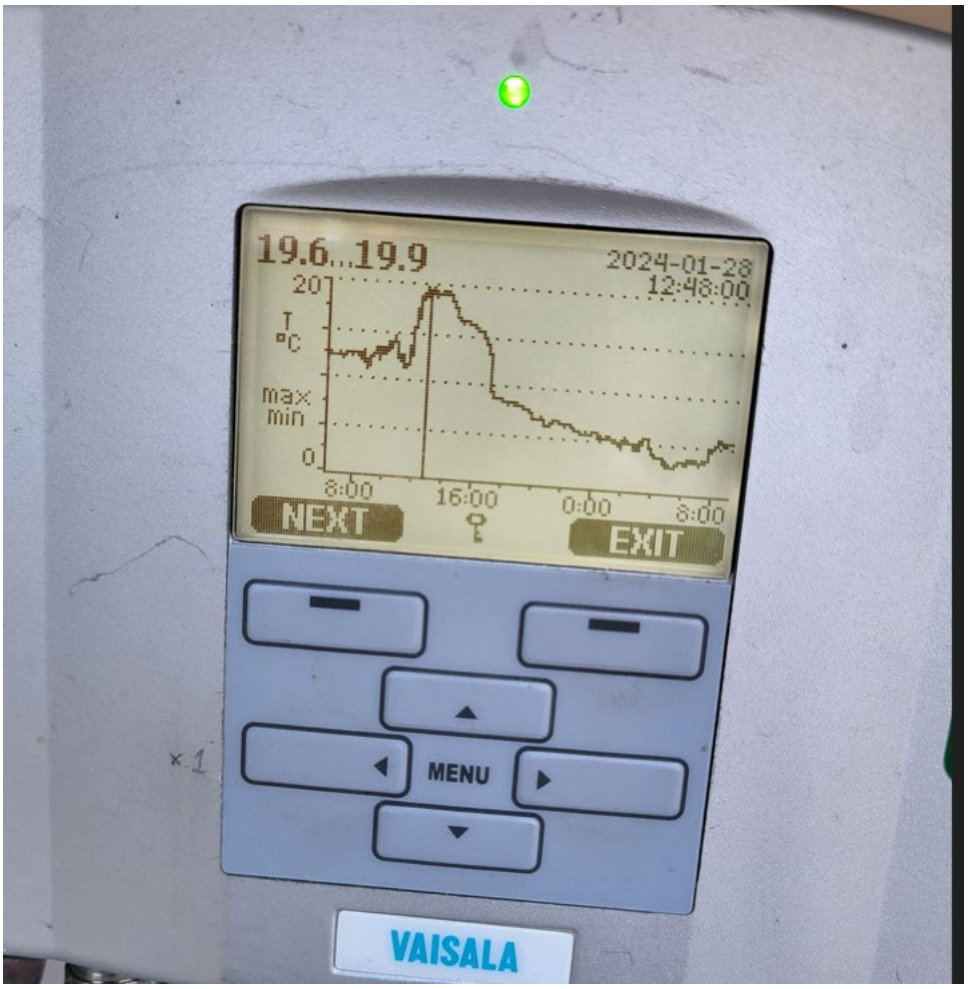
Instrument Exposure RNM	Exposure – Met Office Grading	Date of Assessment: 30/01/2024 **QC ASSESSMENT** — **ANSWER** ASSESSMENT OF SCREEN TEMPERATURES ON ARRIVAL — SATISFACTORY ASSESSMENT OF SCREEN TEMPERATURES ON DEPARTURE — SATISFACTORY ASSESSMENT OF SITE ON ARRIVAL — GOOD ASSESSMENT OF SITE ON DEPARTURE — GOOD Screen Temperature is a CIMO 5, and Satisfactory because of the equinox rule (not more than 50% of the sun's path at the equinox is obstructed by obstacles).
	Unnatural surface areas %	3 m: 0% 10 m: 0% 30 m: 10% 100 m: 21% 100m-3 km: 0.5%
	Exposure - comments	Satisfactory site. Screen is affected by surrounding heat sources (road, buildings) and a small line of trees, with the highest extending to an elevation of 24 degrees – this is the only reason this is a CIMO 5. Without that tree this would be a CIMO 4. Horizon is pretty much unobstructed apart from that (see graph below). Met Office Satisfactory score.
Observer Competence RNM		Excellent observer, very diligent and methodical. No concerns over his competence.
Summary of previous Inspection comments RNM		See exposure comments.
Confirmation that the output data / graphs are credible / consistent.		HMT333 Graphs look credible and consistent. Site also has its own AWS (Davis Vantage Pro 2) – see photos below – which is located approx. 125m southeast of the Met Office station. This equipment is not supported by the Met Office and (by the observers own admission) has not received any maintenance for at least a year, so readings should be treated accordingly. An areal map of the values from a selection of the WOW sites in the area with their spot air temperature readings at 12:59 can be viewed on figure 4 in page 3 of this document. The Davis Vantage AWS at Achfary is circled showing a value at this time of 19C. Please note these WOW values are rounded to a whole degree.
Other Comments / and Outcome.		No other faults or concerns found during the visit. The site, instruments and reading are all satisfactory and within limits.

Conclusion: SWAT Group meeting 31/01/2024. No issues or concerns raised.

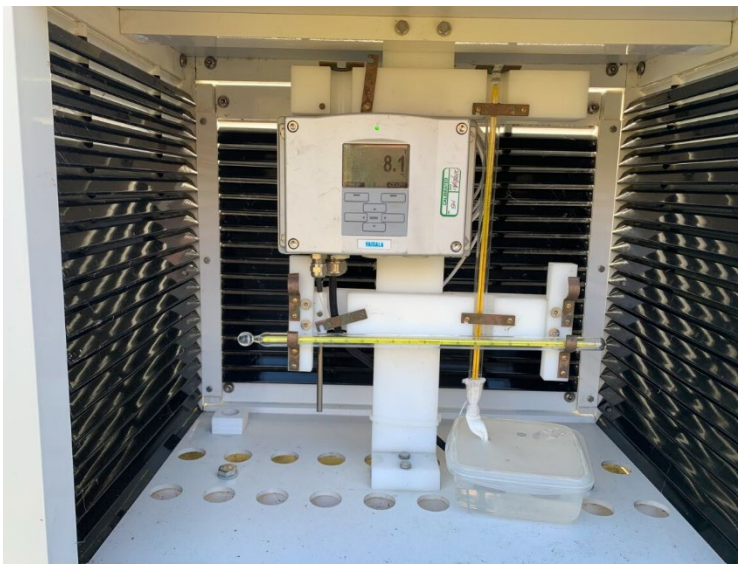
Other Supporting Information

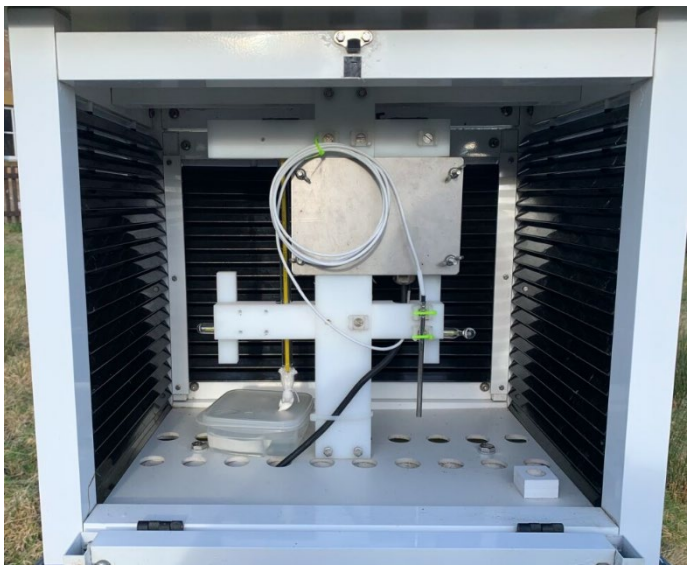
Contents: Various photos

PICTURE OF THE GRAPH TRACE SENT IN BY THE OBSERVER



SCREEN ON ARRIVAL

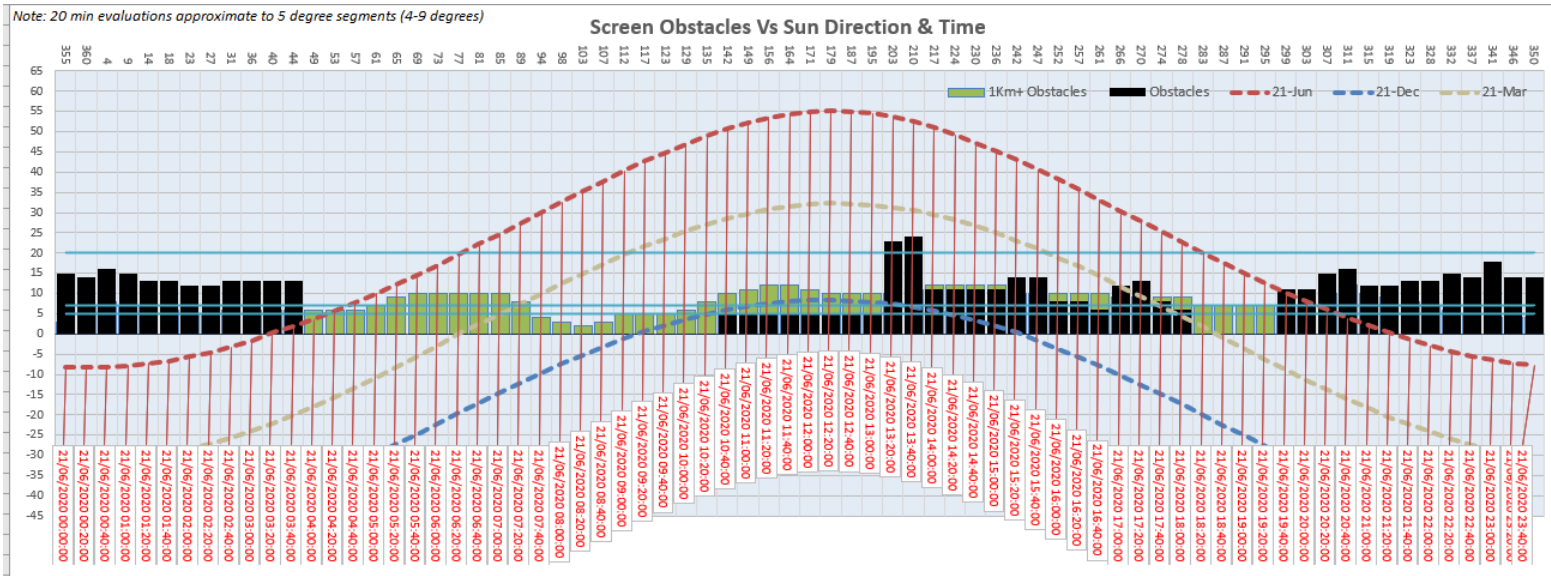




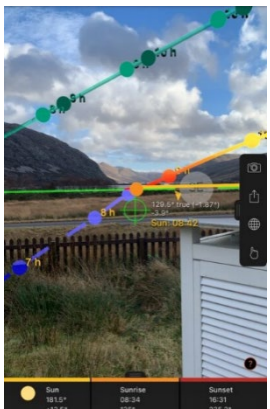
PANORAMIC VIEW & THE SCREEN

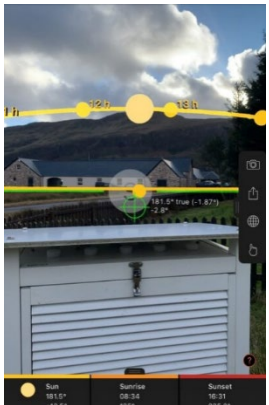
SUN PATH FOR THE 28 JANUARY 2024

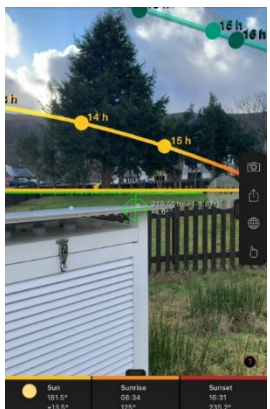
Note: 20 min evaluations approximate to 5 degree segments (4-9 degrees)



	Average	J	F	M	A	M	J	J	A	S	O	N	D	Equinox
Average Sun (%) through the month (CIMO)	84.07	70.35	73.51	89.46	98.72	90.89	84.23	87.56	98.00	93.19	79.60	69.64	73.75	91.67
Average Sun (%) through the month (all obstacles)	67.93	30.64	67.12	78.55	86.49	89.15	84.23	87.26	88.83	81.66	70.67	50.23	0.38	83.33

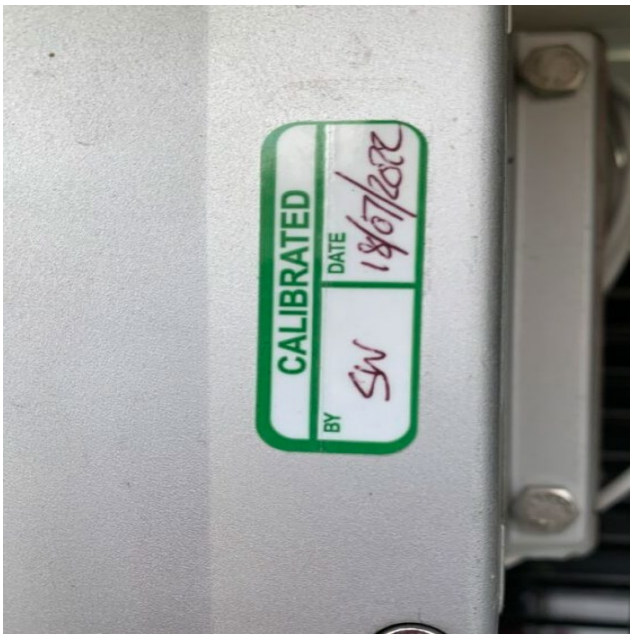






More photos from the site visit can be seen in the Station File here:
https://metoffice.sharepoint.com/sites/observationssurfacenetworkteam/Station%20Files/Forms/AllItems.aspx?id=%2Fsites%2Fobservationssurfacenetworkteam%2FStation%20Files%2FLand%2FA%2FAchfary%200337%2FPhotographs%2F2024%20SWAT%20visit&viewid=e5e0fa92%2D8836%2D40af%2D8ad6%2D603ca10562ce

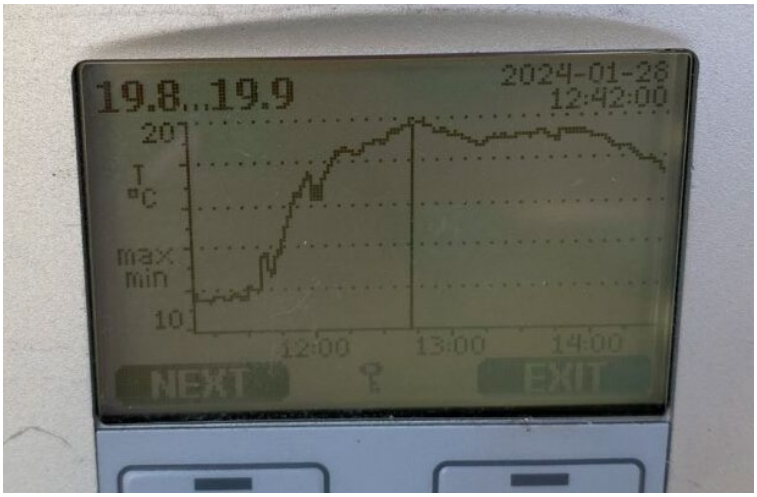
HMT ASSET NUMBER AND CALIBRATION STICKER



HMT GRAPH TRACE – 1 DAY RESOLUTION

HMT GRAPH TRACE – 30 MINUTE RESOLUTION

HMT GRAPH TRACE – 3 HOUR RESOLUTION



OBSERVER'S OWN AWS

MET OFFICE SCREEN
OBSERVER'S AWS